REMARKS – General

By the above amendment, Applicants have amended the specification to correct all known: grammatical errors, nomenclature errors, spelling errors, typographical errors, and inadvertently omitted items recited elsewhere in the applications (i.e., drawings, and list of reference numerals). They have amended the drawings to recite all reference numerals legibly and items recited elsewhere in the application (i.e., list of reference numerals, and specification), and have included drawings of subcomponent circuits to aid the reader in gaining a clearer understanding of the invention.

Also Applicants have rewritten all claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The Objection To The Specification And The Claims Rejection Under Section 112

The claims were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, because the reference numerals on the drawings were in many cases illegible, and not all of the reference numerals recited in the specification were recited on the drawings. Applicants were requested to submit new drawings, which address these deficiencies; electronically drafted drawings that legibly recite the reference numerals for all critical claim elements have been submitted with this amendment.

The claims were rejected under 35 U.S.C. 112, second paragraph, as failing to define the invention in the manner required, because the claims were presented in narrative form and replete with functional or operational language. Applicants were requested to submit claims that clearly and positively state the structure of a complete operative device; previously submitted claims have been cancelled and new conforming claims have been submitted with this amendment.

The Claims Rejection Under Section 102

The claims were rejected under 35 U.S.C. 102(b), as being anticipated by US 6,052,997 (Rosenblatt). The Office Action asserts that Rosenblatt discloses "a method/apparatus for cycling heat between two cycles, having a heat sink, external heat source as claimed." Given the poor composition of the now cancelled claims, it is understandable how this conclusion was reached; however, the new claims submitted with this amendment clearly state that the present invention does not utilize a heat sink to carry away unused heat.

The Reference and Differences of the Present Invention Thereover

Applicants will discuss the reference and the present invention and its unobviousness over the reference.

The example external heat source, used to explain the operation of Rosenblatt, is the exhaust stream discharged from an intermediate or high-pressure steam turbine; therefore

heat is supplied to Rosenblatt in the form of a flow of low-pressure steam (e.g., 75 PSIA @ 420 F). Once received via conduit **42**, the flow of steam is bifurcated into two streams by manifold **43**. One stream is directed to boiler **61**, where a liquid organic working fluid (e.g., propane) is heated to form a pressurized heated turbine vapor medium, and the condensed steam, which gave up its latent heat of condensation to the liquid organic working fluid, is routed back to the external heat source via conduit **49**.

The other stream is directed to generator **1**, where the flow of steam gives up its latent heat of condensation to an ammonia/water solution or "strong aqua," to fractionally distill a portion of the ammonia out of the solution, and the condensed steam is routed back to the external heat source via conduit **49**. The evaporated ammonia/water vapor mixture that results is routed to rectifier **63**, where the water vapor gives up its latent heat of condensation to the liquid organic working fluid via an indirect heat transfer means. The purified ammonia vapor is routed to reheater **23**, where a portion of the latent heat of condensation of the ammonia vapor is given up to the turbine vapor medium via an indirect heat transfer means. Next, the ammonia vapor is routed to ammonia condenser **25**, where the remaining latent heat of condensation is given up to cooling water via an indirect heat transfer means, thus condensing the remaining ammonia vapor.

The cooling water used in ammonia condenser **25** is routed back to the cooling means via conduit **41**, as well as the cooling water used to cool the turbine condensate in absorber heat exchanger **12**. To recap, Rosenblatt utilizes two parallel circuits to receive heat, in the form of flowing low-pressure steam, from an external heat source, causes the steam to

condense to give up its latent heat of condensation, and then returns the condensate to the external heat source.

The example external heat source, used to explain the operation of the present invention, is the cooling water discharged from the condenser of a central power station; therefore heat is supplied to the present invention in the form of warm, liquid water (e.g., 60 F @ 30 PSIA). In the present invention, the heat source flow circuit **1700** acquires and transports replenishment heat to the sfc heat replenishment device **1280**. As the hsfc working fluid **1710** flows through the hsfc heat source heat transfer device **1760**, it substantially cools the warm cooling water discharged from the central power station's condenser, before the cooling water reaches the cooling tower or other cooling means, and increases its own temperature. Then the warmed hsfc working fluid **1710** flows through the hsfc sfc-hsfc heat recycling heat transfer device where it receives excess sensible heat rejected by the sfc working fluid **1210** flowing through the sfc sfc-hsfc heat recycling heat transfer device **1230**. Next, the hsfc working fluid **1710** acquires an additional amount of heat from the hsfc hrfc-hsfc heat recycling heat transfer device **1780*** to achieve the highest temperature in the heat source flow circuit **1700**.

This elevated temperature fluid is then directed to the hsfc hsfc-sfc super-heat heat transfer device **1785***, where it supplies super-heat to the vapor produced in the sfc heat replenishment device **1280**. This cooled, but still elevated temperature fluid is then directed to the hsfc hsfc-sfc evaporative heat transfer device **1790**, where it supplies the

latent heat of vaporization to the secondary liquid component flowing through the heat transfer passages of the shrd hsfc-sfc evaporative heat transfer device **1280-20**.

The hsfc hsfc-sfc evaporative heat transfer device working fluid discharge temperature-regulating device **1795** controls the flow rate in heat source flow circuit **1700**. The substantially cooled liquid, discharged at the lowest temperature in the heat source flow circuit **1700**, then enters the hsfc fluid transfer device **1720*** and is then routed back to the hsfc heat source heat transfer device **1760** to complete the circuit. To recap, the present invention, utilizes a single, non-bifurcated, series circuit to acquire and transport replenishment heat from one, or more, indirect heat transfer devices to the sfc heat replenishment device **1280**, where the remaining liquid portion of the sfc working fluid **1210** is evaporated in the sfc heat replenishment device **1280**.

Unlike Rosenblatt, all heat supplied to the present invention is either converted to mechanical energy and/or electrical energy, recycled for reuse, or lost to the surrounding environment by convection, conduction, or radiation losses. Further, these losses are held to a minimum by utilizing effective thermal insulation, and maintaining the temperature on the inside of the present invention's machinery space, whenever possible, at a temperature lower than that of the external environment. In addition, while the present invention will readily operate utilizing the external heat source required by Rosenblatt (i.e., steam @ 420 F, 75 PSIA), Rosenblatt could not function utilizing the external heat source proposed in the abstract of the present invention (i.e., liquid water @ 60 F, 30 PSIA).

The design goal for the present invention was to utilize readily available, lower-grade, external environmental heat sources, industrial process cooling being but one; any sustainable heat source, marginally warmer than the evaporating temperature (e.g., 40 F) within the sfc heat replenishment device **1280** will do. As can be seen, 420 F steam and liquid water at a drinkable temperature of 60 F are both sources of heat, but they are not interchangeable, in the case of Rosenblatt, as they are for the present invention.

Further, the heat supplied to Rosenblatt from the external heat source is utilized at the temperature it is supplied at, or lower. By contrast, the present invention utilizes the heat that it receives from the external heat source to produce a lower temperature vapor, it entrains this vapor with a high velocity motive flow, thoroughly combines both streams, then compresses that mixture to a higher pressure, which results in the vapor partially/fully condensing to produce a low-quality saturated mixture, or liquid, at an elevated temperature, one substantially higher than that of the external heat source. The elevated temperature liquid then supplies heat to the cfc super-ambient temperature heat source **1330**, which in turn supplies a useable heat flow to an incorporated heat engine flow circuit **1400**, which then rejects unused heat to the sfc sub-ambient temperature heat sink **1250**, much of which will be recycled. In short, the present invention generates a larger temperature differential (i.e., raising the temperature of cfc super-ambient temperature heat source, and lowering the temperature of sfc sub-ambient temperature heat sink), in order to supply a useable heat flow to the incorporated heat engine flow circuit **1400**.

Also, Rosenblatt utilizes an absorption refrigeration cycle sub-system to optimize the flow of heat; the present invention does not utilize such a complex and expensive device. A waste heat recycling thermal power plant utilizes a cfc sub-ambient pressure generating device to both create the conditions required: to evaporate sfc working fluid **1210** at a sub-ambient temperature in the sfc heat replenishment device **1280**, and to combine the resulting vapor with a motive flow working fluid **1110** and to then pressurize the mixture to produce a heated effluent.

Lastly, Rosenblatt requires a source of cooling water, supplied by a cooling tower, or other cooling means, via conduit **36**, and once heated, the cooling water is returned to the cooling means via conduit means **41**. The present invention does not utilize an external heat sink to carry away unused heat, hence the "waste heat recycling" terminology in the title.

In summary, a waste heat recycling thermal power plant captures low-grade heat, which it then concentrates in order to generate a super-ambient temperature heat source, at a temperature substantially greater than that of the external heat source. It then supplies a useable heat flow to an incorporated heat engine flow circuit **1400**, wherein a portion of that useable heat flow is converted to mechanical energy and/or electrical energy, and much of the waste heat that would otherwise be rejected to the environment is recycled.

Summary of Adjustments to Independent Claims

Independent claims 1 and 4 were written in a narrative form, replete with functional or operative language, and have been cancelled. Claim 1 has been rewritten as claim 8 to positively recite the structure of the complete operative device. Claim 4 has been rewritten as claim 20 to positively recite the structure of the complete operative device.

Independent Claims Recite Novel Subject Matter

Independent claim 8 recites novel physical features relative to Rosenblatt, specifically that the reference bifurcates the heat source pathway, whereas the present invention utilizes a single, non-bifurcated, series circuit to acquire and transport operating heat. In addition, Rosenblatt requires a source of cooling water, in order to reject unused heat to the environment, whereas the present invention recycles much of the unused heat and does not intentionally reject any heat to the environment.

Independent claim 20 recites novel physical features relative to Rosenblatt, specifically that the reference utilizes a complex and expensive absorption refrigeration cycle sub-system to achieve a low temperature heat sink to condense its incorporated vapor turbine's exhaust, as well as supply heat to its turbine vapor medium partway through its isentropic expansion, the present invention produces a sub-ambient temperature heat sink **1250** by exposing sfc working fluid **1210** to a region of sub-ambient pressure generated by a cfc sub-ambient pressure generating device **1320**. In addition, the vapor produced in

the sfc heat replenishment device **1280** supplies the heat required to produce the heated effluent discharged from a cfc sub-ambient pressure generating device **1320**, which then supplies heat to the cfc super-ambient temperature heat source **1330**.

Review of Pertinent Prior Art Made of Record But Not Relied Upon

US 3,950,949 (Martin et al.) utilizes low-grade heat sources to supply the latent heat of vaporization required to boil a working fluid in boiler **30** (e.g., 150 – 300 F). Martin et al. also rejects unused heat via conventional condenser **54**, and requires a source of high-grade heat to be applied to superheater **39** and reheater **44** (e.g., greater than 600 F).

US 5,925,223 (Simpson et al.) utilizes a secondary economizer **SE** to extract heat from a power plant stack's exhaust gases, cooling them to a point just above the dew point of the water vapor within the exhaust gases. The low-pressure steam that results is utilized to pre-heat condensate and supply heat to a multi-effect desalination unit. This invention rejects heat to the environment via the concentrated brine that is discharged from the multi-effect desalination unit.

US 5,860,279 (Bronicki et al.) utilizes an organic working fluid to absorb the heat normally rejected to the condenser of a central power station, by evaporating an organic working fluid, and then utilizing the vapor to fuel a turbine **47**. The latent heat of condensation of the organic turbine's exhausted vapor is rejected to the environment via coolant condenser **50**.

US 6,253,552 (Peletz, Jr.) utilizes a binary working fluid (e.g., ammonia/water solution) to acquire and transport heat, a portion of which is routed to the Distillation and Condensation Sub-system (DCSS) **100**. Within the DCSS **100** waste heat **101** is dumped to a heat sink, such as a river or pond. The Kalina cycle utilizes high-grade heat to fuel its operation, additionally the working fluid solution is separated into its component parts, and routed via multiple pathways before being recombined.

The Novel Physical Features of Claim 8 Address Solution to Long-felt and Unsolved Need

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they address a long-felt and unsolved need. The long-felt and unsolved need addressed by the present invention is the desire to improve the efficiency of heat wasting processes, and thereby reduce the associated fuel expenses. As the present invention effectively utilizes low-grade heat to operate, the present invention is superior to the reference cited, as similar low-quality heat could not be utilized to operate Rosenblatt. The novel features of applicants' invention, which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Produce an Unappreciated Advantage

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they produce an unappreciated advantage. The

unappreciated advantage produced by the present invention is the ability to generate a substantial temperature differential, one sufficiently great enough to drive a useable heat flow. As the present invention produces a cfc super-ambient temperature heat source temperature greater than the temperature of the external heat source, the present invention is superior to the reference cited, as Rosenblatt is required to utilize heat at the temperature it is supplied at, or lower. The novel features of applicants' invention which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Produce Unexpected Results

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they produce unexpected results. The unexpected results produced by the present invention is its ability to operate a high-efficiency thermal power plant, utilizing low-grade heat sources such as condenser cooling water. As the present invention produces operating efficiencies equal to or better than the state-of-the art for coal-fired plants (e.g. 48.5%), utilizing such a plant's waste stream as fuel, the present invention is superior to the reference cited, as Rosenblatt is required to utilize much higher-grade heat sources to produce more modest efficiency gains. The novel features of applicants' invention which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Are Contrary to the Prior Art

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they are contrary to the prior art. The present invention is contrary to the prior art in that it utilizes a low-grade heat source to fuel the operation of a high-efficiency thermal power plant, as such the present invention is superior to the reference cited, as Rosenblatt is required to utilize a higher-grade heat source in order to operate. The novel features of applicants' invention which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Utilize a New Principal of Operation

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they utilize a new principal of operation. The new principal of operation utilized by the present invention is the use of a single device to create both: a region of sub-ambient pressure and a heated effluent. As the present invention utilizes a simpler mechanical arrangement to operate, the present invention is superior to the reference cited, as Rosenblatt's absorption refrigeration cycle sub-system is a complex and expensive device. The novel features of applicants' invention, which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Solve a Different Problem

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they solve a different problem. The problem addressed by the reference is to produce a device that operates more efficiently than a "conventional" low-pressure turbine/condenser combination of a central power station; one use of the present invention is to intercept the heat being sent to a cooling tower for rejection to the environment and convert it to mechanical energy and/or electrical energy. As the present invention does not require extensive and intrusive modifications, or prohibitive adaptation expenses, the present invention is superior to the reference cited, as Rosenblatt requires all of those undesirable items. The novel features of applicants' invention, which effect these differences are, as stated, clearly recited in claim 8.

The Novel Physical Features of Claim 8 Have Not Been Implemented to Date

Applicants submit that the novel physical features of claim 8 are unobvious and hence patentable under section 103 since they have not been implemented to date. As the novel physical features of the present invention have not been implemented to date, by those skilled in the art, despite their great advantages, indicate that they are unobvious. As the present invention can be produced in standard capacity units and used in multiples to achieve the required total output, the present invention is superior to the reference cited, as Rosenblatt requires custom designed units to replace the existing Low-Pressure Turbine/Condenser combination of a central power station. The novel features of

applicants' invention, which effect these differences are, as stated, clearly recited in claim 8.

Dependent Claims Recite Novel Subject Matter

New dependent claims 9 through 19 incorporate all the subject matter of claim 8 and add additional subject matter which makes them a fortiori and independently patentable over the reference.

Claims 9 through 13 recite alternative methods for producing a region of sub-ambient pressure and subsequently producing a heated effluent to be supplied to the cfc super-ambient temperature heat source **1330**.

Claims 14 through 19 recite alternative methods for utilizing the residual pressure of the sfc working fluid to recirculate excess working fluid in the sfc heat replenishment device **1280** to the sfc sub-ambient temperature heat sink **1250**.

New dependent claims 21 through 31 incorporate all the subject matter of claim 20 and add additional subject matter which makes them a fortiori and independently patentable over the reference.

Claims 21 through 25 recite alternative elements for producing a region of sub-ambient pressure and subsequently producing a heated effluent to be supplied to the cfc super-ambient temperature heat source **1330**.

Claims 26 through 31 recite alternative elements for utilizing the residual pressure of the sfc working fluid to recirculate excess working fluid in the sfc heat replenishment device **1280** to the sfc sub-ambient temperature heat sink **1250**.

CONCLUSION

For all the above reasons, applicants submit that the specification and claims are now in proper form, and that the claims all define patentably over the prior art. Therefore they submit that this application is now in condition for allowance, which action they respectfully solicit.

Conditional Request for Constructive Assistance

Applicants have amended the specification and claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, applicants respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. section 2173.02 and section 707.07(j) in order that the undersigned can place

this application in allowable condition as soon as possible and without the need for further proceedings.

Very Respectfully,

Timothy M. Kirby

Wanda M. Kirby

-- Applicants Pro Se --

Enc: New sheets for Figs. 1A through 1H and Figs. 2A & 2B.

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Certificate of Mailing, I certify that this correspondence will be deposited with the United States Postal Service as First Class mail with proper postage affixed in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450."

Date: September 24th, 2004 ______________________, Applicant

DRAWINGS:

Fig. 1A is an electronically drafted rendition of the manually produced drawing originally submitted to illustrate the features of the main embodiment. Figs. 1B through 1H are similarly produced, and each concentrates on illustrating the features of a single circuit of the main embodiment. Fig. 2A is an electronically drafted rendition of the manually produced drawing originally submitted to illustrate the features of the alternative embodiment. Fig. 2B is similarly produced, illustrates the features of the suction flow circuit of the alternative embodiment. All reference numerals are typed for legibility, and recited on the appropriate drawings. In some instances, items (**1260, 1270, 1510A/B, 1650-20, 1650-30**, and **1650-40**) have been re-numbered and/or renamed, and in one instance an item (**1715**) recited in the list of reference numerals, but inadvertently omitted from Fig. 1 has been recited graphically on the appropriate amended drawings (Figs. 1A, 1H, and 2A), and textually in the specification. In addition, items (**1340-60, 1350-30, 1420***, **1430-20B***, **1430-20D***, and **1640***) recited in the specification, but inadvertently omitted from Fig. 1 have been recited graphically on the appropriate amended drawings (Figs. 1A, 1D, 1E, 1G, and 2A). Conversely, items (**1240-15, 1240-35, 1290, 1295, 1415, 1650-30, 1650-40,** and **1750-30**) recited graphically on the previously submitted drawings, but inadvertently omitted from the specification, have been recited textually, where appropriate, in the specification to aid the reader gain a clearer understanding of the invention.

List of Reference Numerals

Page 81-85, remove/edit reference numerals as indicated:

1000	waste heat recycling thermal power plant
1100	motive flow circuit (mfc)
1110	mfc working fluid
1120	mfc fluid transfer device
1130*	mfc fluid filtering device
1140	mfc fluid flow-regulating device
1200	suction flow circuit (sfc)
1210	sfc working fluid
1220	sfc fluid flow-regulating device
1230	sfc sfc-hsfc heat recycling heat transfer device
1240	sfc shrd-ssths fluid transfer device (ssftd)
1240-10	ssftd working fluid
1240-15	ssftd sfc working fluid inlet
1240-20	ssftd shrd ~~hsfc-sfc evaporative heat transfer device~~ excess working fluid inlet
1240-30	ssftd cssd overpressure relief device working fluid inlet
1240-35	ssftd suction chamber
1240-40	ssftd ~~ihefc-sfc evaporative heat transfer device~~ working fluid discharge
1250	sfc sub-ambient temperature heat sink (ssths)
1250-10	ssths working fluid
1250-20	ssths ihefc-sfc evaporative heat transfer device
1250-30*	ssths liquid/vapor separation device
1250-40	ssths ihefc-sfc evaporative heat transfer device pressure-regulating device
1260	shrd hsfc-sfc evaporative heat transfer device ssths vapor supply device
1270	shrd hsfc-sfc evaporative heat transfer device ssths liquid supply device
1280	sfc heat replenishment device (shrd)
1280-10	shrd working fluid
1280-20	shrd hsfc-sfc evaporative heat transfer device
1280-30*	shrd liquid/vapor separation device

1280-40*	shrd hsfc-sfc super-heat heat transfer device
1280-50	shrd hsfc-sfc evaporative heat transfer device pressure-regulating device
1290	sfc shrd-cspgd vapor transfer device
1295	sfc shrd-ssftd excess tertiary liquid component transfer device
1300	conjoined flow circuit (cfc)
1310	cfc working fluid
1320	cfc sub-ambient pressure generating device (cspgd)
1320-10	cspgd working fluid
1320-20	cspgd motive flow inlet
1320-30	cspgd suction flow inlet
1320-40	cspgd suction chamber
1320-50	cspgd conjoined flow discharge
1330	cfc super-ambient temperature heat source (csths)
1330-10	csths working fluid
~~1330-20~~	~~csths cfc-ihefc heat transfer device (cchtd)~~
1330-20A*	~~cchtd~~ csths super-heat heat transfer device
1330-20B	~~cchtd~~ csths ~~latent heat heat transfer~~ boiler heating device
1330-20C*	~~cchtd~~ csths feed-heat heat transfer device
1340	cfc flow divider (cfd)
1340-10	cfd working fluid
1340-20	cfd conjoined flow inlet
1340-30	cfd flow separation chamber
1340-40	cfd motive flow discharge
1340-50	cfd suction flow discharge
1340-60	cfd fluid import/export ~~port~~ device
1350	cfc safety/service device (cssd)
1350-10	cssd working fluid
1350-20	cssd fluid thermal expansion device
1350-30	cssd overpressure relief device
1350-40	cssd venting/servicing ~~port~~ device
1400	incorporated heat engine flow circuit (ihefc)

1410	ihefc working fluid
1415	ihefc fluid storage device
1420*	ihefc fluid transfer device (not required if utilizing gravity-induced circulation)
1430	ihefc super-ambient temperature heat source (isths)
1430-10	isths working fluid
~~1430-20~~	~~isths cfc-ihefc heat transfer device (ichtd)~~
1430-20A*	~~ichtd~~ isths feed-heat heat transfer device
1430-20B*	~~ichtd~~ isths ihefc starting device
1430-20C	~~ichtd~~ isths ~~latent heat heat transfer device~~ boiler
1430-20D*	~~ichtd~~ isths liquid/vapor separation device
1430-20E*	~~ichtd~~ isths super-heat heat transfer device
1440	ihefc vapor export device (ived)
1440-10	ived working fluid
1440-20	ived ihefc working fluid inlet
1440-30	ived flow separation chamber
1440-40	ived overpressure relief device working fluid discharge
1440-50	ived ipedlc working fluid discharge
1450	ihefc fluid flow-regulating device
1460	ihefc pressure expansion device (e.g., Rankine cycle vapor turbine)
1470	ihefc sub-ambient temperature heat sink (isths)
1470-10	isths working fluid
1470-20	isths ihefc-sfc condensing heat transfer device
1470-30	isths venting/servicing ~~port~~ device
1480*	ihefc pressure expansion device lubrication circuit (ipedlc)
1480-10	ipedlc working fluid
1480-20	ipedlc pressure-regulating device
1480-30	ipedlc vapor bearing device
1480-40	ipedlc vapor flow-regulating device
1485	ihefc overpressure relief device
1490	ihefc fluid return device (ifrd)

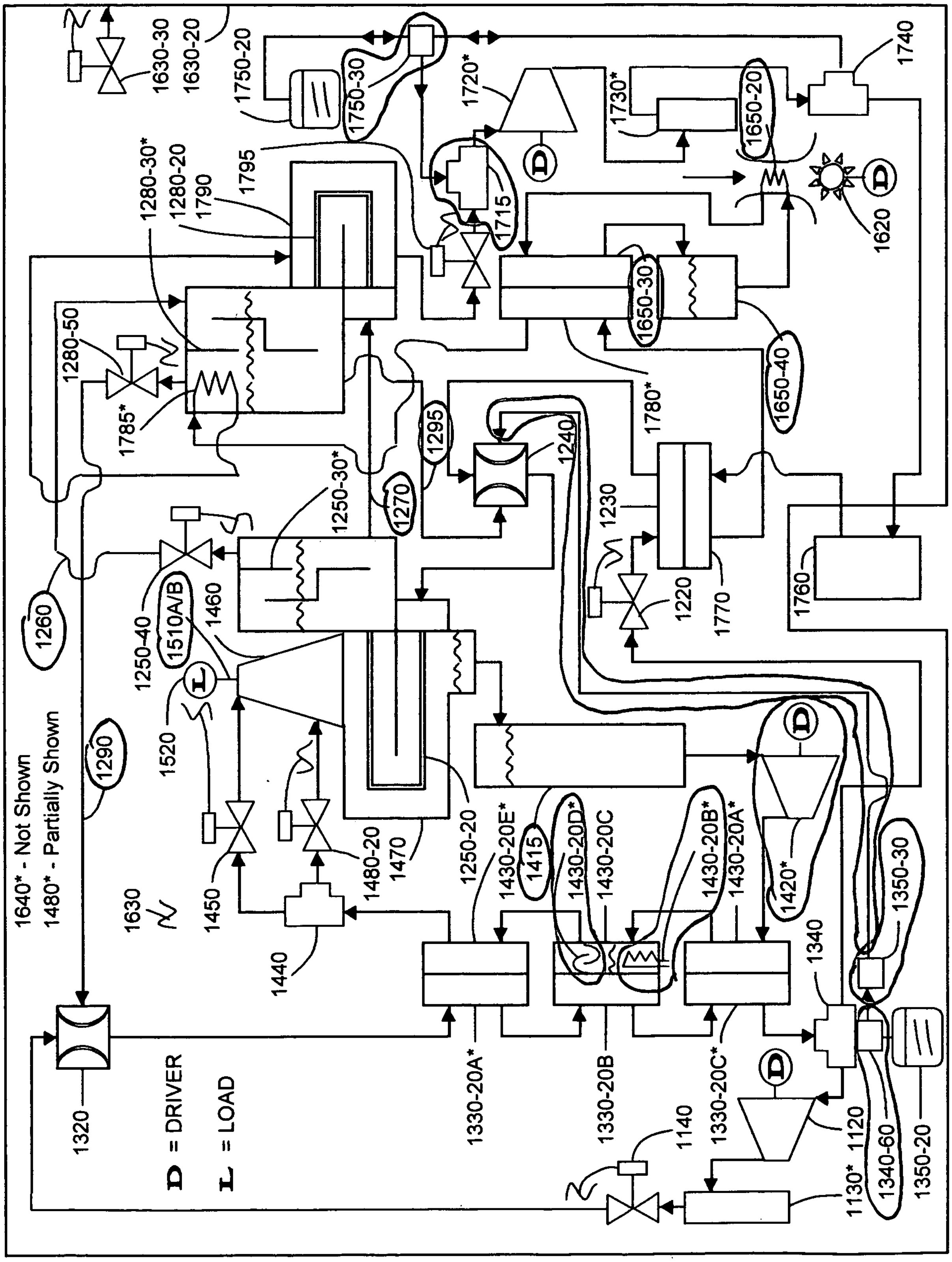
1490-10	ifrd working fluid
1490-20	ifrd ihefc overpressure relief device working fluid inlet
1490-30	ifrd ipedlc vapor flow-regulating device working fluid inlet
1490-40	ifrd flow collecting chamber
1490-50	ifrd isths ihefc-sfc condensing heat transfer device working fluid discharge
1500	mechanical output device (mod)
1510A	mod hermetic power coupling device (omit if 1510B is utilized)
	or
1510B	mod intermediate drive shaft with shaft sealing device (omit if 1510A is utilized)
1520	mod driven mechanical device (e.g., gearbox, generator, propeller shaft, etc.)
1600*	heat recovery flow circuit (hrfc, omit if 1780 is not utilized)
1610	hrfc working fluid
1620	hrfc ventilation motive device
1630	hrfc machinery space (hms)
1630-10	hms working fluid
1630-20	hms exposed surfaces (i.e., floor, walls, ceiling, equipment, piping, etc.)
1630-30	hms overpressure relief device (discharges to the environment)
1640*	hms cooling distribution device (hcdd)
1640-10	hcdd working fluid (e.g., air)
1640-20	hcdd working fluid inlet ~~device~~
1640-30(x)	hcdd distribution device ("x" - designation changes for each unit)
1640-40(x)	hcdd cooled machinery unit ("x" - designation changes for each unit)
1640-50(x)	hcdd machinery cooling exhaust collection device ("x" - designation changes for each unit)
1650	hrfc heat recycling heat transfer device (hhrhtd)
1650-10	hhrhtd working fluid
1650-20	hhrhtd hrfc-hsfc heat recycling evaporative heat transfer device
1650-30	hhrhtd hrfc-hsfc heat recycling condensing heat transfer device
1650-40	hhrhtd working fluid storage device

1700	heat source flow circuit (hsfc)
1710	hsfc working fluid
1715	hsfc fluid return device (hfr~~m~~d)
1715-10	hrfd working fluid
1715-20	hrfd hssd overpressure relief device working fluid inlet
1715-30	hrfd hsfc working fluid discharge
1720*	hsfc fluid transfer device (not required if utilizing gravity-induced circulation)
1730*	hsfc fluid filtering device
1740	hsfc fluid import/export ~~port~~ device
1750	hsfc safety/service device (hssd)
1750-10	hssd working fluid
1750-20	hssd fluid thermal expansion device
1750-30	hssd overpressure relief device
1750-40	hssd venting/servicing ~~port~~ device
1760	hsfc heat source heat transfer device
1770	hsfc sfc-hsfc heat recycling heat transfer device
1780*	hsfc hrfc-hsfc heat recycling ~~condensing~~ heat transfer device
1785*	hsfc hsfc-sfc super-heat heat transfer device
1790	hsfc hsfc-sfc evaporative heat transfer device
1795	hsfc hsfc-sfc evaporative heat transfer device working fluid discharge temperature-regulating device

Items marked with an "*" are optional enhancements to the basic embodiment.

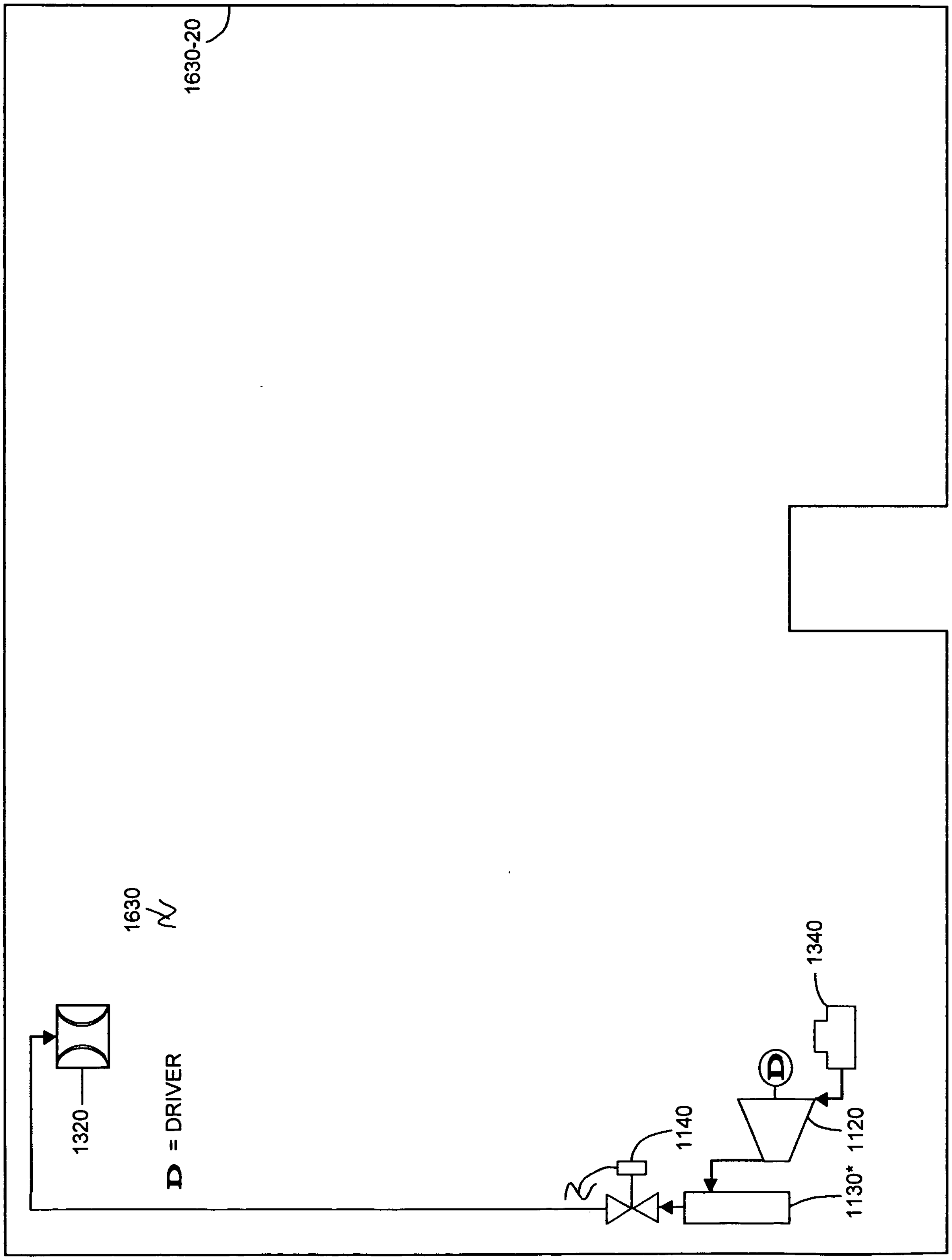
Page 71, replace with the following new paragraph:

Fig. 1A – Main embodiment, a waste heat recycling thermal power plant.



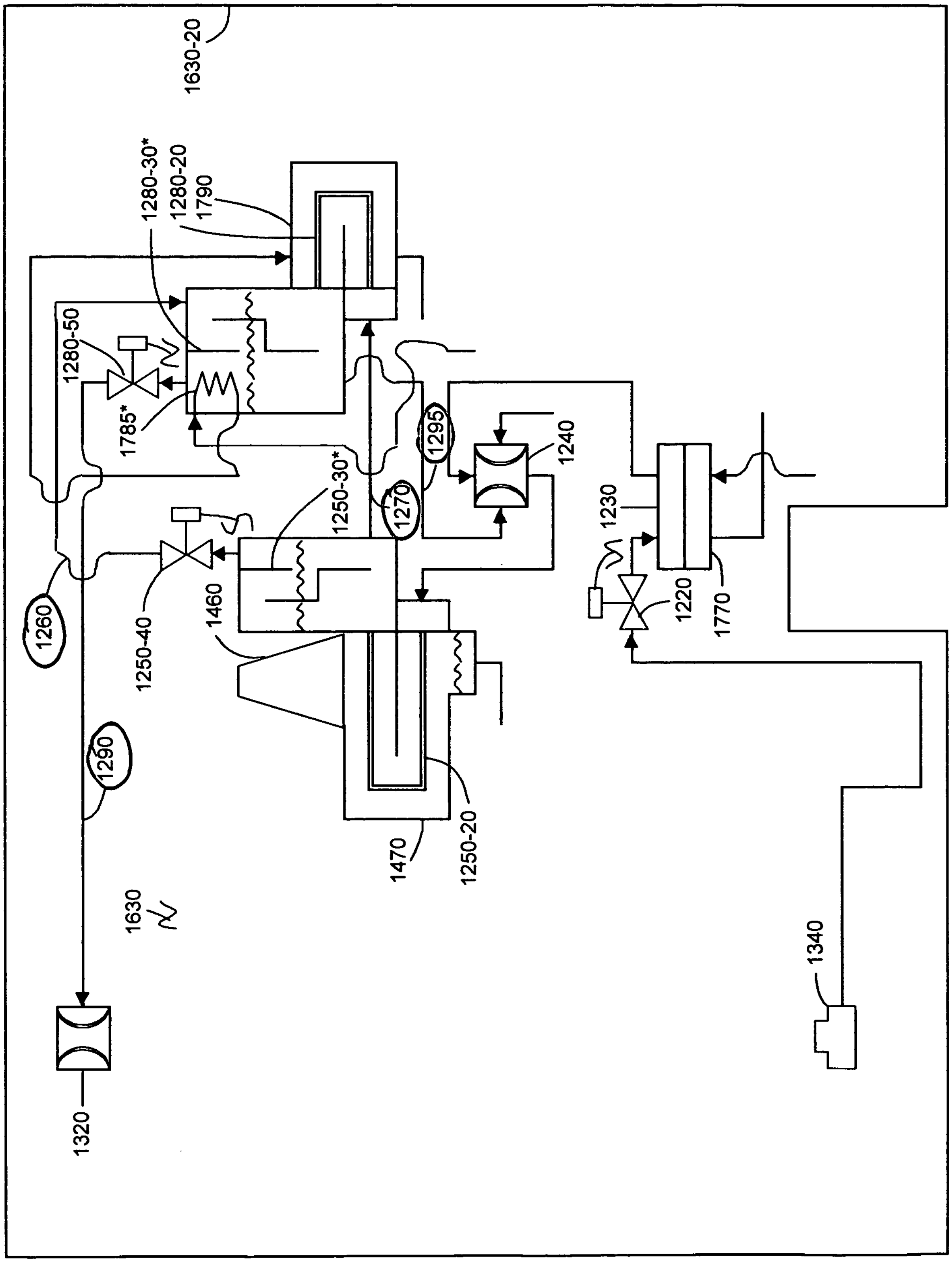
Page 72, insert the following new paragraph:

<u>Fig. 1B – Main embodiment, motive flow circuit of a waste heat recycling thermal power plant.</u>



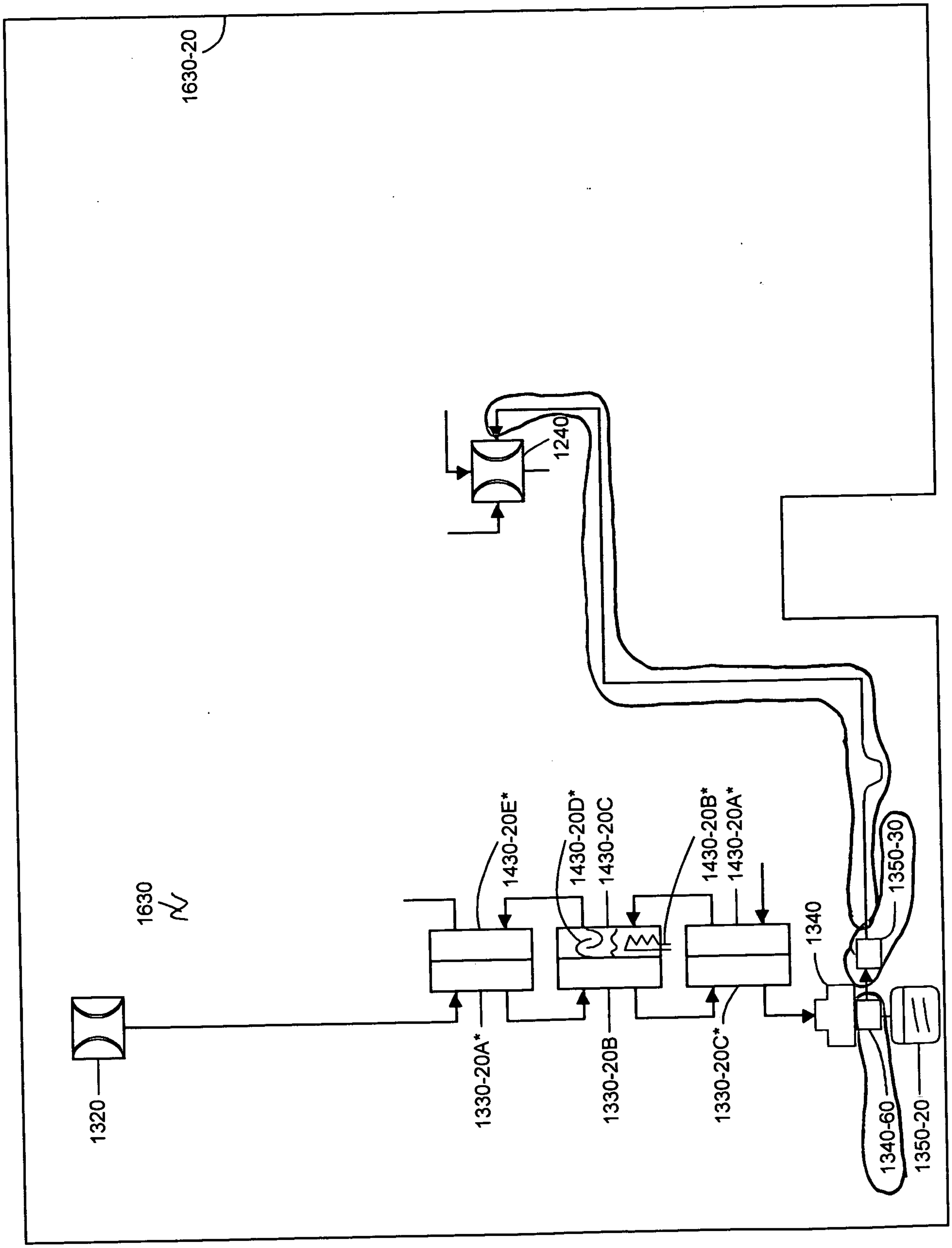
Page 73, insert the following new paragraph:

<u>Fig. 1C – Main embodiment, suction flow circuit of a waste heat recycling thermal power plant.</u>



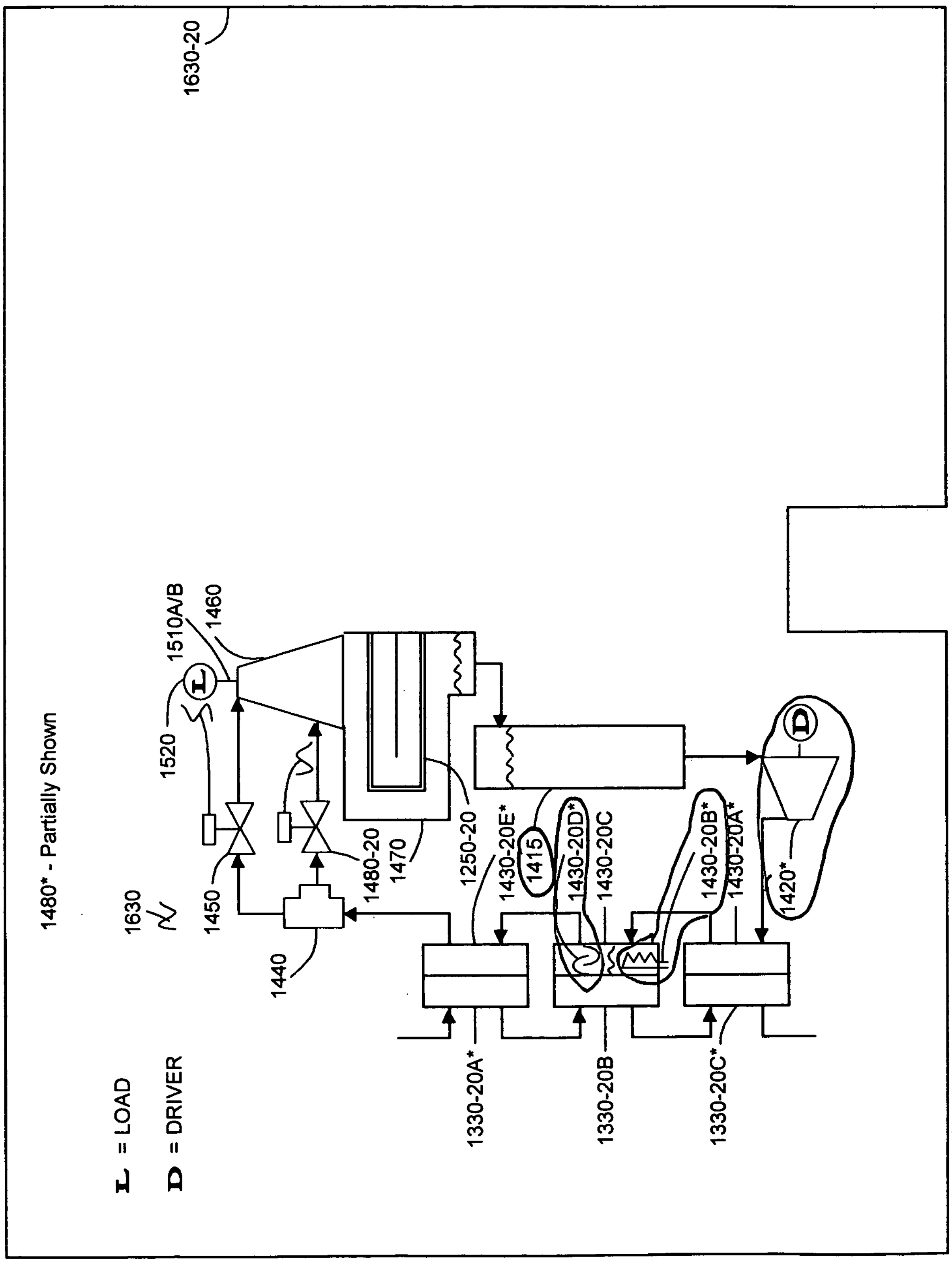
Page 74, insert the following new paragraph:

<u>Fig. 1D – Main embodiment, conjoined flow circuit of a waste heat recycling thermal power plant.</u>



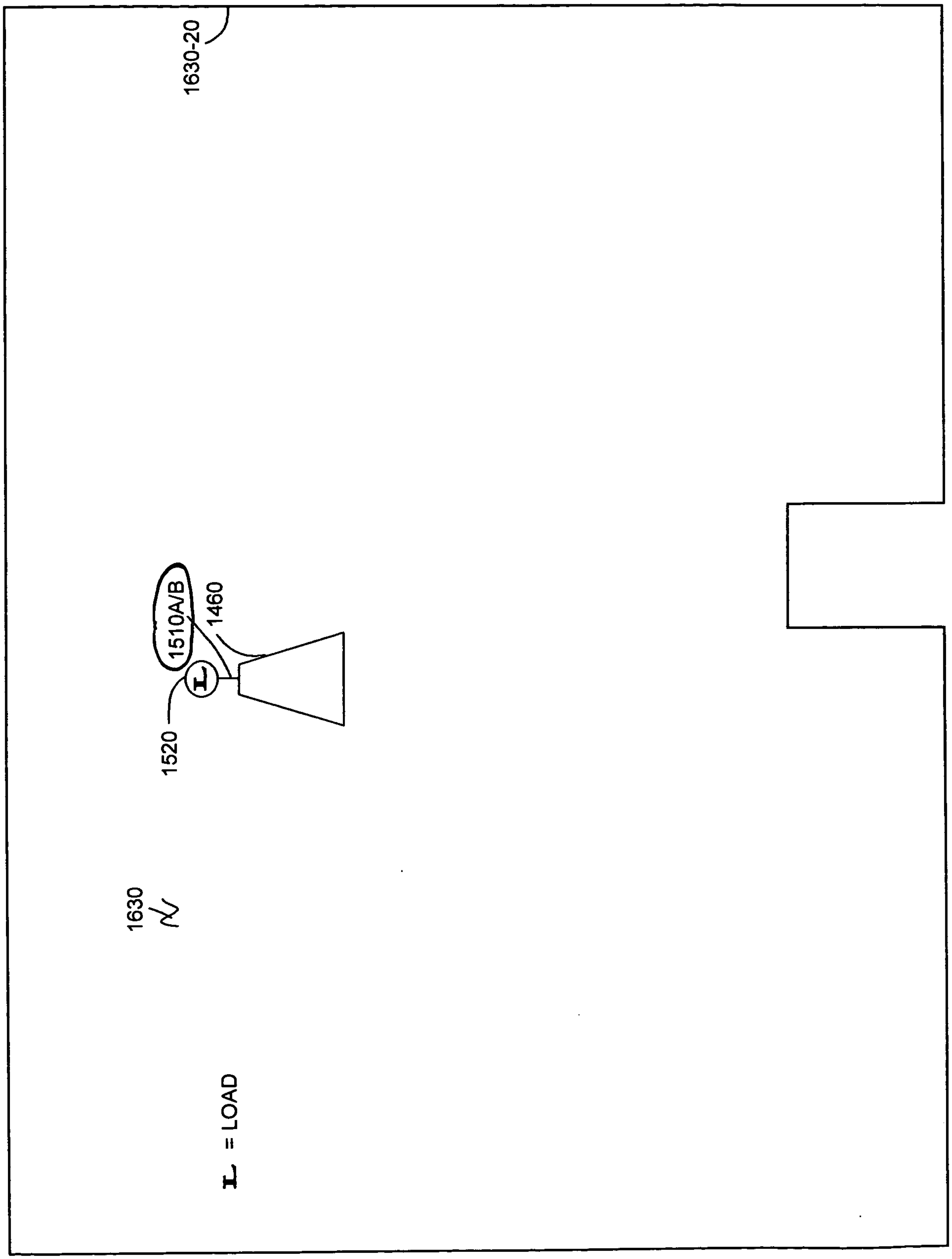
Page 75, insert the following new paragraph:

Fig. 1E – Main embodiment, incorporated heat engine flow circuit of a waste heat recycling thermal power plant.



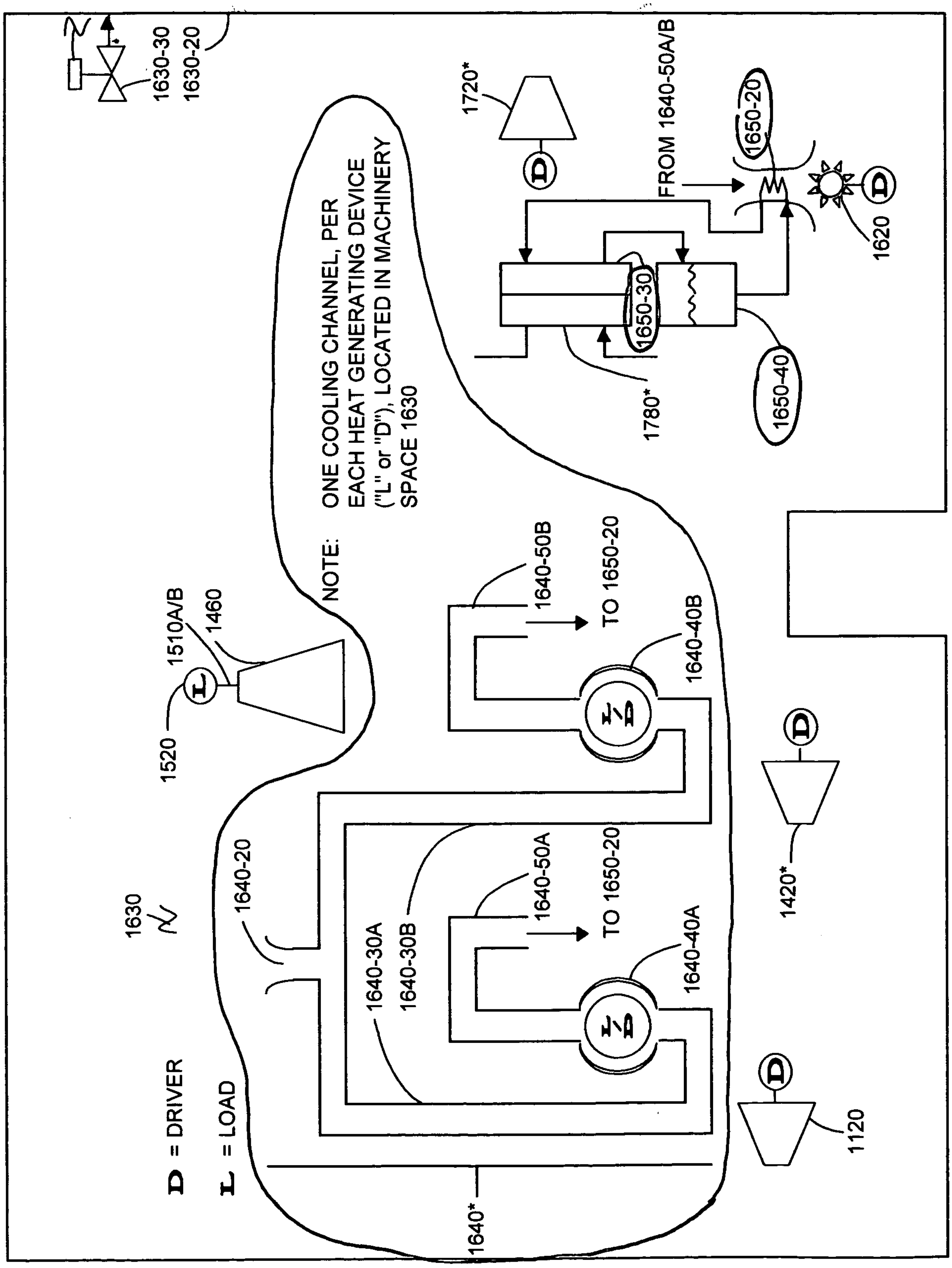
Page 76, insert the following new paragraph:

Fig. 1F – Main embodiment, mechanical output device of a waste heat recycling thermal power plant.



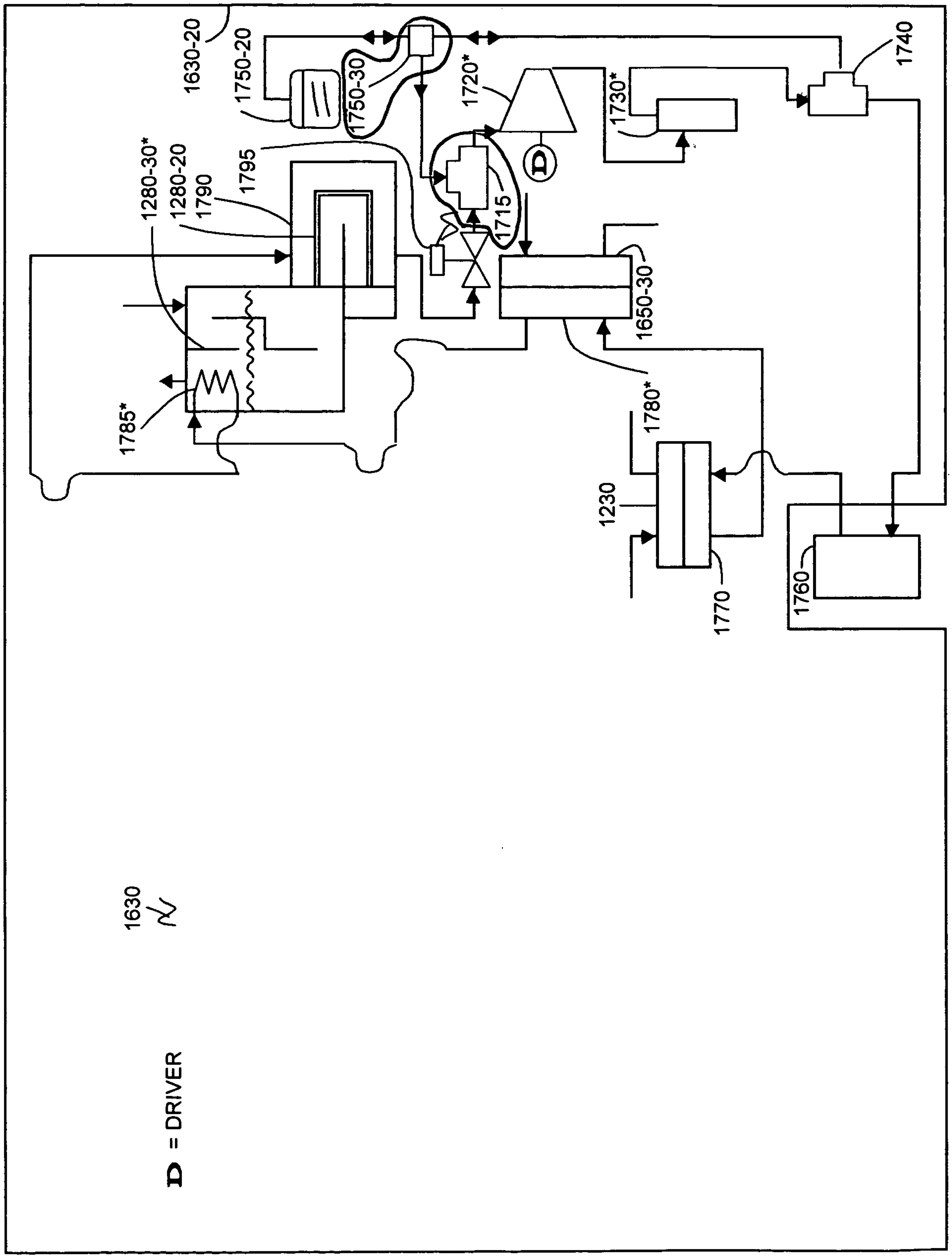
Page 77, insert the following new paragraph:

Fig. 1G – Main embodiment, heat recovery flow circuit of a waste heat recycling thermal power plant.



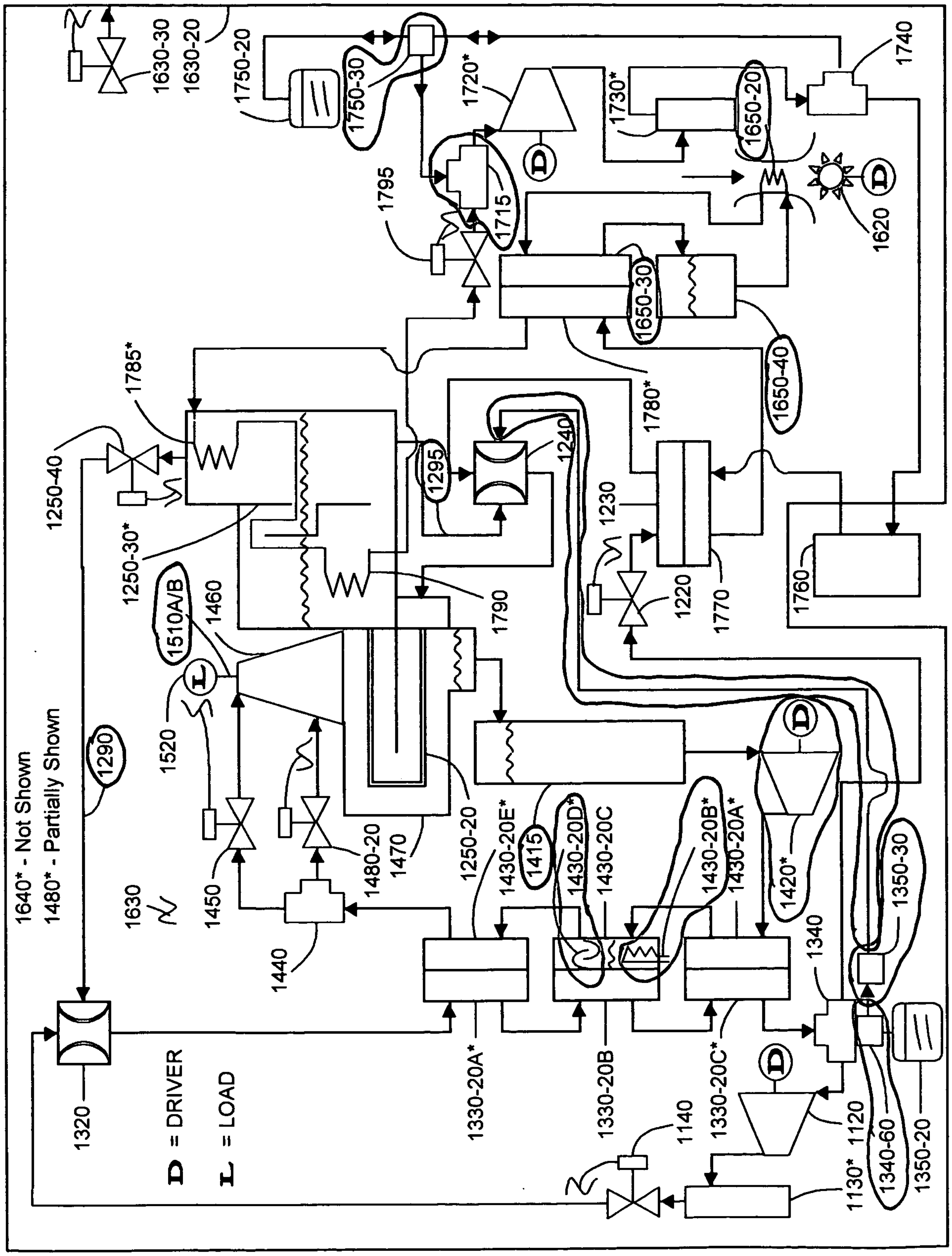
Page 78, insert the following new paragraph:

<u>Fig. 1H – Main embodiment, heat source flow circuit of a waste heat recycling thermal power plant.</u>



Page 79, replace with the following new paragraph:

<u>Fig. 2A – Alternative embodiment, a waste heat recycling thermal power plant, with a modified suction flow circuit.</u>



Page 80, insert the following new paragraph:

<u>Fig. 2B – Alternative embodiment, suction flow circuit of a waste heat recycling thermal power plant.</u>